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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/673,230	06/16/2003	Paul D. Lusk	960067.ORI	3805
7590	03/20/2006		EXAMINER	
Nikolai Mersereau & Dietz 820 International Centre 900 Second Avenue South Minneapolis, MN 55402-3813			MITCHELL, KATHERINE W	
			ART UNIT	PAPER NUMBER
			3677	

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/673,230	LUSK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Katherine W. Mitchell	3677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 December 2005.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 22-33 and 36-42 is/are pending in the application.  
 4a) Of the above claim(s) 28-33 and 42 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 22-27 and 36-41 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Election/Restrictions***

The original species restriction quoted an incorrect citation of authority. The restriction is the same, but the authority was under PCT Rule 13.1.

The species as originally claimed did not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons:

The different makeup of the propellants are not considered to share a technical feature, as the only shared technical feature was a single base propellant with a non-energetic plasticizer, selected from the group of citrates and adipates listed in claims 27 and 28 and 36. As noted in the office action, Pluniguian USP 3451883 teaches an efficient non-energetic plasticizer, which consists of material selected from adipate compounds, including consisting of -- diisobutyl adipate or dibutyl phthalate (Pluniguian -- col 4 lines 20-42). Thus since the only shared feature is known, it is not a special technical feature.

As applicant elected over the phone, and confirmed in the response, Group 1 claims 22-27 and 34-36 were elected and an action was issued on these claims. These claims were directed to the species that was DBP-free, as noted in the earlier office action:

*...[applicant must] elect a single claimed species based on the composition of the propellant (i.e. Applicant must elect the species having or not having dibutyl phthalate) for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.*

1. Applicant now states that although he elected claims 22-27 and 34-36, the species that did not require a DBP-free single base propellant, (the species that allowed the possibility of DBP), he now desires to elect the species (Group II) specifically claimed as without DBP. Per the previous office action, the telephone conversation with Nicolai Mersersau on week ending 9/10/2005, and applicant's response of 12/22/2005, a provisional election was made with traverse to prosecute the invention of claims 22-27 and 34-36, the species that allowed the possibility of DBP. Claims 28-33 were withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant cannot now change his mind on the elected species after an action on the merits has been received. The fact that claims 27 and 28 have different DBP requirements is not an inconsistency- it is the reason for the species restriction. Claims 28-33 remain withdrawn by examiner as drawn to the non-elected species. Note that if and when claim 36 is allowed, it appears 28-33 can be rejoined.

Newly submitted claim 42 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: It is to a method of solubilizing and plasticizing nitrocellulose, and not to the plasticizer or propellant requiring the plasticizer as originally claimed.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 42 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Specification***

2. The disclosure is objected to because of the following informalities: on page 9, as amended 12/2005, lines 12-17, the wording is unclear. Applicant states :

*Thus, high grade nitrocellulose which has above about 13.15% N is practically insoluble in either, but is readily dispersed by plasticizers and acetone. Below about 13.15% N, ether can be used. In some cases, combinations of acetone or ether and other solvents such as alcohols or other ketones are preferred.*

Applicant corrected the previous either/ether problem, and appears to have introduced another (bolded by examiner). Appropriate correction is required.

Examiner has given careful consideration to the amendment correcting “ethyl cellulose” to “ethyl centralite”. While “ethyl centralite” is in the original claims, it is not in the specification described as a stabilizer. However, examiner does believe this was clearly a typing error, and that one of ordinary skill, reading original page 6 and the original claims regarding ethyl centralite, would realize the typing error, and thus it is NOT being considered new matter. Similarly, the clarification of ether/either above is considered to be an obvious typing error.

On page 13, Table 2B refers to Plasticizer “340”, but the description in line 6 refers to “319”.

***Claim Objections***

3. Claim 38 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim, claim 37. Applicant

is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 22-26 and 36-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Claim 36 is rejected as indefinite, as “a desired level of mechanical properties” is unclear. What is desired, and by what/whose standards? What mechanical properties are being considered? Further, what is considered “efficient”?
- Claims 22-26 are rejected as depending from rejected claims.
- Claims 36 and 22-26 are also rejected as indefinite, as “13.15%N” is unclear -- is this weight percent or mole percent? While applicant has clarified this in his response, it must be in the claims for the claims to be clear.
- Claim 37 recites “free of high energy plasticizers” and also “ a minor fraction for plasticizer’. Then dependent claims 38,39,41 refer to “said plasticizer”. Since two separate plasticizers are in the parent claim, the dependent claims are unclear due to improper antecedent basis. Claim 40 is unclear as it depends on claim 38.

***Claim Rejections - 35 USC § 102***

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6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 36 is rejected under 35 U.S.C. 102(b) as being anticipated by Pluniguiian USP 3451883.

Examiner notes -- Applicant is claiming only one thing - a non energetic plasticizer. Other than the preamble defining “a non-energetic plasticizer”, the only requirement is that it be selected from the choices listed.

Pluniguiian teaches an efficient non-energetic plasticizer, which consists of material selected from adipate compounds, including consisting of -- diisobutyl adipate or dibutyl phthalate (Pluniguiian -- col 4 lines 20-42).

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 22-27 and 34-38,40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunigan et al. USP 3711343 in view of Elrick USP 4029529 and Pluniguiian USP 3451883 and Yunan USP 5187320.

Dunigan discloses a non-energetic plasticizer suitable for plasticizing high Nitrogen content nitrocellulose in a DNT-free single base propellant formulation.

(Example I and II, col 2 lines 10-col 3 line 16). The formulation is capable of being used in a propellant capable of firing some type of projectile (col 1 lines 32-40). The plasticizer consists of material selected from ATEP, acetyltri-n-butyl citrate, triethyl citrate, tributyl citrate, diisobutyl adipate, diisooctyl adipate, and mixtures thereof, such that the non-energetic plasticizer enables substitution of a smaller amount of said plasticizer for all high energetic plasticizers, including DNT (col 2 lines 44-52). First, examiner notes that in an apparatus claim, as long as the claimed structure is capable of performing the intended use, the limitation is considered to be met. Further, if the same compound is disclosed, it is assumed to inherently have the same properties, such as enabling substitution of a smaller amount.

Dunigan teaches 12.6% N nitrocellulose, which is greater than 13.15%N in col 2 lines 33-39, example 1 and II discloses 61 and 70.2% nitrocellulose (nitrocellulose with no nitroglycerin or nitroguanidine and thus inherently single-base, 98% in col 2 is about 97%), a non-energetic plasticizer (diethylphthalate, 1% is about 2-5 %) and has no DNT. However, Dunigan does not teach the specified non-energetic plasticizer.

Elrick teaches that multiple plasticizers for nitrocellulose can be used together including phthalates and adipates, (col 4 lines 5-16) and that ethyl centralite is a known nitrocellulose stabilizer. (col 5 lines 1-3) (claim 29)

Plunguiian and Yunan teach that among the many possible plasticizers for nitrocellulose are diisobutyl adipate and dibutyl phthalate (Plunguiian -- col 4 lines 20-42) and acetyl triethyl citrate (ATEC) (Yunan -- col 4 lines 18-30)

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Dunigan and Plunguiian and Yunan before him at the time the invention was made, to modify Dunigan as taught by Plunguiian and Yunan to include the alternate well-known non-energetic plasticizers of Plunguiian and Yunan, since they will perform in the same manner and are well known alternatives. It would also have been obvious to one of ordinary skill in the art, having the teachings of Dunigan and Elrick before him at the time the invention was made, to modify Dunigan as taught by Elrick to include multiple plasticizers and substitute ethyl centralite for the diphenylamine as the stabilizer, since they will perform in the same manner and are well known alternatives.

10. Claims 39,41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunigan et al. USP 3711343 in view of Elrick USP 4029529 and Plunguiian USP 3451883 and Yunan USP 5187320 as applied above and further in view of common knowledge in the art as evidenced by Dillehay et al USP 5565150. As discussed above, Dunigan et al. in view of Elrick and Plunguiian and Yunan teach all the elements except that the plasticizer contains a major fraction of ATEC. ATEC is well-known as a plasticizer for cellulosics, as evidenced by the definition of ATEC cited in the references, and Dillehay further teaches in col 4, copied below:

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Energetic and nonenergetic plasticizers may be used, depending on whether low energy (LE) or high energy (HE) gun propellants are desired. Known and novel energetic plasticizers may be used, such as bis(2,2-dinitropropyl)acetate/bis(2,2-dinitropropyl)formal (BDNPF/BDNPA), trimethylolethanetrinitrate (TMETN), triethyleneglycoldinitrate (TEGDN), diethyleneglycoldinitrate (DEGDN), nitroglycerine (NG), 1,2,4-butanetrioltrinitrate (BTTN), alkyl nitrates (NENA's), or mixtures thereof. Typical nonenergetic plasticizers include triacetin, acetyltriethylcitrate (ATEC), dioctyladipate (DOA), isodecylperiargonate (IDP), dioctylphthalate (DOP), dioctylmaleate (DOM), dibutylphthalate (DBP), or mixtures thereof. The gun propellant compositions processed according to the present invention typically include from 5% to 10% plasticizer, by weight.

that ATEC is a "typical nonenergetic plasticizer" and note that claim 17 of Dillehay is specific that it is used with nitrocellulose for propellants and explosives.

Applicant has provided no criticality or unexpected results for ATEC over any of the other known plasticizers for nitrocellulose, and it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have selected a major plasticizer component to be ATEC, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious engineering selection from known alternatives. *In re Leshin*, 125 USPQ 416. ATEC would be desirable because of its low cost and wide availability and familiarity.

### ***Response to Arguments***

11. Applicant's arguments filed 12/22/2005 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies,

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i.e., applicant argues that none of the references teach the plasticizers claimed with particular significance to plasticizing high nitrogen nitrocellulose that is insoluble in ether, but the nitrocellulose is readily dispersed by the plasticizers claimed in combination with acetone, are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Further, claims 36 and 22-26 are claiming only the plasticizer, and a plasticizer meeting the limitations is assumed capable of meeting the intended use, or else the claim would not be enabled for one to make and use the invention. Finally, the only description examiner finds in the specification for use with acetone is on page 9,

The processing solvents for processing single base propellants include conventional solvents for NC which vary depending on the N content of the nitrocellulose. Thus, high grade nitrocellulose which has above about 13.15% N is practically insoluble in ether, but is readily dispersed by plasticizers and acetone. Below about 13.15% N, either can be used. In some cases, combinations of acetone or ether and other solvents such as alcohols or other ketones are preferred.

which has the acetone as only a preferred option in some cases, so that applicant's argument that the acetone is critical does not seem to have any support.

Applicant argues that "claim 27 did not depend from claim 36, but incorporated material from it as an independent claim." Examiner quotes claim 27 as presented 1/2005 below, and notes that it required all the limitations of claim 36:

27. *currently amended*). A single base propellant free of high energy plasticizers comprising by weight:  
(a) from about 93 to about 97% high nitrogen nitrocellulose;  
(b) from about 2-5% of a non-energetic plasticizer as

*defined in claim 36; and*  
(c) about 2% dibutylphthalate.

Only because of the inclusion of claim 36 limitations did the examiner not restrict the propellant from the plasticizer as combination/subcombination. Although that is no longer the case, examiner is choosing not to further restrict at this time.

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine W. Mitchell whose telephone number is 571-272-7069. The examiner can normally be reached on Mon - Thurs 10 AM - 8 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, J. J. Swann can be reached on 571-272-7075. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Katherine W Mitchell  
Primary Examiner  
Art Unit 3677

Kwm  
2/23/2006

